

Application Serial No. 10/045,652

REMARKS

The Applicants and the undersigned thank Examiner Bello for his careful review of the application and especially for his time and consideration given during the telephonic interview conducted on February 3, 2006. A summary of this telephonic interview is provided below.

Claims 1-33 have been rejected by the Examiner. Upon entry of this amendment, claims 1-33 remain pending in this application. The independent claims are Claims 1, 13, 25, and 30.

Consideration of the present application is respectfully requested in light of the above claim amendments to the application, the telephonic interview of February 3, 2006, and in view of the following remarks.

Summary of Telephonic Interview Conducted on February 3, 2006

The Applicants and the undersigned thank Examiner Bello for his time and consideration given during the telephonic interview of February 3, 2006. During this telephonic interview, the Applicants' representative explained that U.S. Patent No. 6,611,522 issued in the name of Zheng et al. (hereinafter, the "Zheng reference") did not teach all of the elements recited in a proposed claim amendment that was submitted to the Examiner prior to the telephonic interview.

Specifically, it was pointed out to Examiner Bello that the Zheng reference did not teach that each multiplexer comprises a final stage for controlling bandwidth of downstream packets in an electrical domain relative to a subscriber optical interface coupled to the laser transceiver node. The subscriber optical interface receives downstream optical packets and converts the downstream optical packets into an electrical domain to support services of a subscriber.

It was explained to the Examiner that the Zheng reference did not provide any teaching of a multiplexer comprising a plurality of classifiers and a plurality of policers where the multiplexers are coupled to and directly modulate a respective laser transmitter at a final stage of an optical network. It was also explained that the proposed amendment was intended to directly address the Examiner's question in his Final Office Action of October 5, 2005: the multiplexers are a final stage relative to what? The Applicants have amended the independent claims to further emphasize the "relative" finality or exit portion of the claimed optical network in accordance with the Examiner's helpful comments made in the last Final Office Action of October 5, 2005.

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Examiner Bello acknowledged the Applicants' discussion of the differences between the claimed invention and the prior art. Examiner Bello agreed to conduct an updated search for the claimed invention as amended when a formal amendment is submitted.

The Applicants and the undersigned request Examiner Bello to review this interview summary and to approve it by writing "Interview Record Okay" along with his initials and the date next to the summary in the margin as required by M.P.E.P. § 713.04, page 700-202.

Claim Rejections under 35 U.S.C. § 103(a)

The Examiner rejected Claims 1-33 under 35 U.S.C. § 103(a) as being obvious in view of the Zheng reference. The Applicants respectfully offer remarks to traverse these pending rejections. The Applicants will address each independent claim separately as the Applicants believe that each independent claim is separately patentable over the prior art of record.

Independent Claim 1

The rejection of Claim 1 is respectfully traversed. It is respectfully submitted that the Zheng reference fails to describe, teach, or suggest the combination of: (1) a laser transceiver node for receiving downstream packets; (2) a subscriber optical interface coupled to the laser transceiver node (3) for receiving downstream optical packets and (4) converting the downstream optical packets into an electrical domain to support services of a subscriber; wherein, the laser transceiver node further comprises: (5) a routing device for directing downstream packets in an electrical domain to a plurality of multiplexers; (6) the plurality of multiplexers for receiving downstream packets from the routing device, (7) wherein each multiplexer comprises a final stage for controlling bandwidth of the downstream packets in the electrical domain relative to the subscriber optical interface, (8) the routing device determining which downstream packets are sent to a respective multiplexer, each multiplexer comprising: (9) a plurality of classifiers for determining type of information contained in a downstream packet and (10) for assigning a downstream packet to a particular policer, and (11) a plurality of policers for controlling bandwidth based upon a comparison between parameters assigned to each policer by a network provider and a downstream packet; and (12) laser transmitters coupled to the multiplexers, (13) wherein each multiplexer is coupled to and directly modulates a respective laser transmitter (14)

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for converting the downstream packets into an optical domain that are sent to a respective subscriber optical interface, as recited in amended independent Claim 1.

The Zheng Reference

The Zheng reference describes a switching shelf 12 that includes a housing 20 for containing the components of the switching shelf 12 that include eight line cards 22. The eight line cards 22 are printed circuit boards that contain circuitry for receiving and transmitting data. Each line card 22 is designed to receive an OC-48 input data stream, corresponding to 2.488 gigabits per second (Gbps). See Zheng reference, column 9, lines 30-40 and Figure 2 reproduced below.

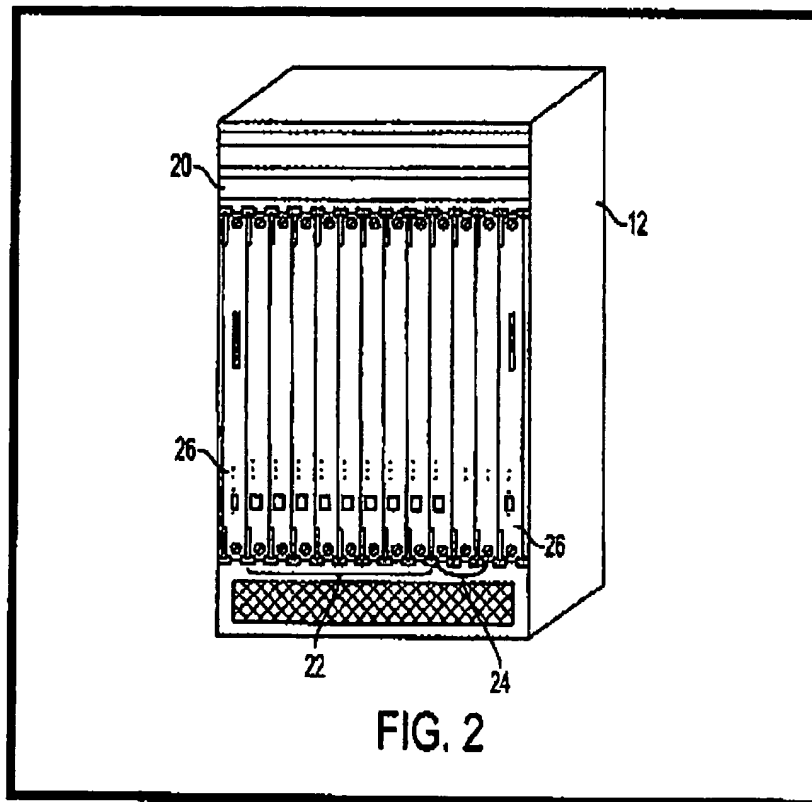
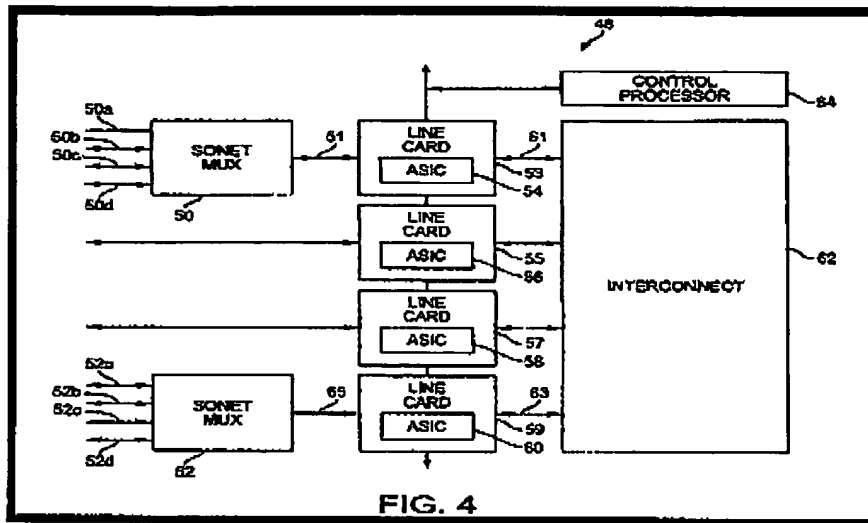


Figure 4 of the Zheng reference (reproduced below) illustrates four of the eight potential line cards 22 that can be included in a switching shelf 12. The block diagram 48 of FIG. 4 illustrates line cards 53, 55, 57 and 59, an interconnect 62, the SONET multiplexers 50 and 52,

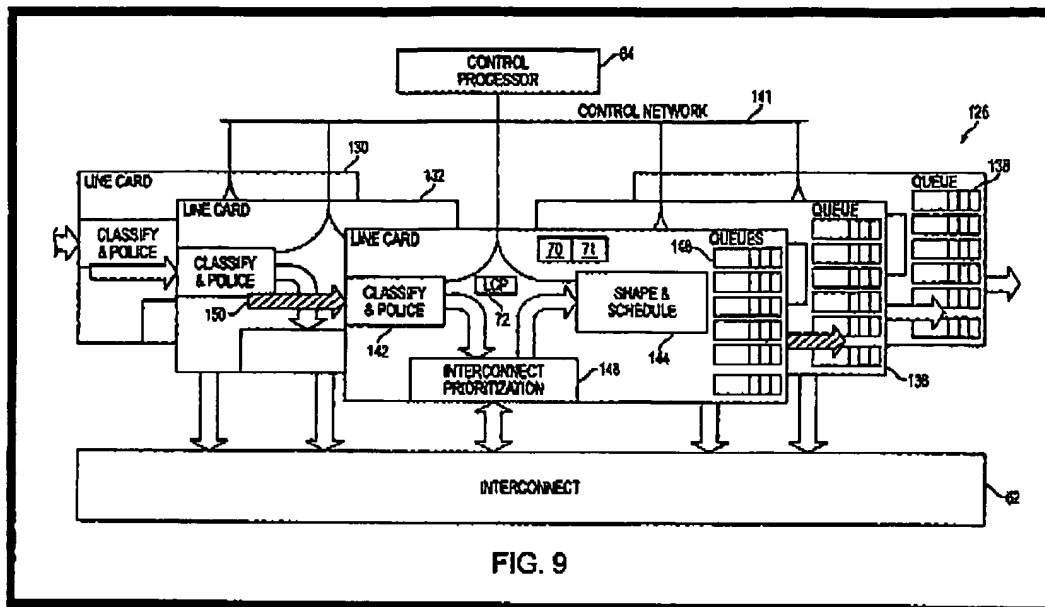
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and a control processor 64. In operation, data enters a SONET multiplexer 50 by way of lines 52a-52d. The multiplexer 52 passes a single physical OC-48 data stream to the line card 59 by way of line 65.



The line card 59 forwards information stripped from the OC-48 data stream to the interconnect 62, by way of line 63. The interconnect 62 processes the received information and forwards it to a destination line card, by way of example, line card 53, along line 61. The destination line card 53, in turn, transfers the received information by way of the OC-48 interface 51 to the SONET multiplexer 50. The multiplexer 50 forwards the received information to an external source by way of lines 50a-50d. Information transfers involving line cards 55 and 57 occur in much the same fashion. Zheng reference, column 10, lines 27-45 and Figure 4 reproduced above.

In Figure 9, the Zheng reference illustrates five line card modules 130-138 and the interconnect 62 in more detail. A control processor 64 is also depicted. A control network 141 electrically connects the line cards 130-138. Each line card 130-138 includes classification and policing elements 142, shaping, scheduling and congestion control elements 144, a queuing structure 146, prioritization elements 148, a line card processor (LCP) 72, a receive ASIC 70 and a transmit ASIC 71.



The line cards 130-138 of Figure 9 illustrated above receive data via input ports 150, classify and police 142 the data and send it to the interconnect 62. The prioritization elements 148 prioritize the data over the Interconnect to ensure that time critical data is delivered on time. The shaping, scheduling and congestion control elements 144 shape, schedule, and flow control data coming from the interconnect 62 according to the QoS of the data flow and congestion status, and places the data in an appropriate priority output queue 146 for transmission. See Zheng reference, column 17, lines 30-45.

As discussed during the telephonic interview with Examiner Bello and as mentioned above in the summary of the interview, the Applicants point out to the Examiner that the Zheng reference does not use its classifying and policing elements 142 of Figure 9 as a final stage for controlling bandwidth of downstream packets in an electrical domain. Specifically, the Zheng reference does not provide any teaching of each multiplexer comprising a final stage for controlling bandwidth of the downstream packets in the electrical domain relative to the subscriber optical interface. Instead, the Zheng reference uses classifiers and policers in an entrance or initial portion of a network for further processing in the electrical domain, such as further processing by interconnect 62 that is directly coupled to the classifying and policing elements 142.

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Further, the Zheng reference does not provide any teaching of classifiers that assign a downstream packet to a particular policer. The Zheng reference also does not provide any teaching of a subscriber optical interface that receives optical packets from the laser transmitter and that converts the optical packets into the electrical domain to support services of a subscriber. And lastly the Zheng reference does not provide any teaching of laser transmitters coupled directly to multiplexers in which a multiplexer modulates a respective laser transmitter, as recited in amended independent Claim 1.

In light of the differences between amended independent Claim 1 and the Zheng reference, one of ordinary skill in the art recognizes that the broadest, reasonable interpretation of the Zheng reference cannot anticipate or render obvious the recitations as set forth in amended independent Claim 1. Accordingly, reconsideration and withdrawal of this rejection of claim 1 are respectfully requested.

Independent Claim 13

The rejection of Claim 13 is respectfully traversed. It is respectfully submitted that the Zheng reference fails to describe, teach, or suggest a method for processing downstream packets of an optical network that comprises the combination of: (1) receiving downstream packets with a laser transceiver node comprising an exit portion of an optical network; (2) at the exit portion of the optical network, (3) classifying a downstream packet (4) by evaluating a header of the packet; (5) determining if the downstream packet matches at least one of rate and size parameters; (6) assigning one of two priority values to the downstream packet based upon the determination if the downstream packet matches one of rate and size parameters; (7) determining whether to store the downstream packet in one of a plurality of buffers (8) based upon a weighted random early discard function that employs one of the priority values; (9) receiving the downstream packet directly from an output buffer with a laser transmitter; (10) modulating the laser transmitter with the downstream packet; (11) receiving the downstream optical packet with a subscriber optical interface coupled to the laser transceiver node; and (12) converting the downstream optical packet into an electrical domain with the subscriber optical interface to support services of a subscriber, as recited in amended independent Claim 13.

While Figure 9 of the Zheng reference describes multiple buffers 146 that are present on individual line cards, the Zheng reference does not provide any teaching of receiving a

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downstream packet directly from an output buffer with a laser transmitter and modulating a laser transmitter with the downstream packet. Instead, the Zheng reference describes and illustrates how output from the buffers 146 can be further processed by an interconnect 62 that operates in the electrical domain for further processing of downstream packets. The Zheng reference also does not provide any teaching of a subscriber optical interface that receives optical packets from the laser transmitter and that converts the optical packets into the electrical domain to support services of a subscriber.

In light of the differences between independent Claim 13 and the Zheng reference, one of ordinary skill in the art recognizes that that Zheng reference cannot anticipate or render obvious the recitations as set forth in amended independent Claim 13. Accordingly, reconsideration and withdrawal of the rejection of Claim 13 are respectfully requested.

Independent Claim 25

The rejection of Claim 25 is respectfully traversed. It is respectfully submitted that the Zheng reference fails to describe, teach, or suggest a network policer system, comprising the combination of: (1) an optical network comprising: (2) a data service hub for generating downstream data packets; (3) a transceiver node coupled to the data service hub and comprising (4) an exit path relative to the data service hub (5) for receiving and processing the downstream data packets, the transceiver node further comprising: (6) a routing device for directing the downstream data packets in an electrical domain to a plurality of multiplexers; (7) the plurality of multiplexers for receiving downstream packets from the routing device, (8) wherein each multiplexer comprises a (9) final stage for controlling bandwidth of the downstream packets in the electrical domain relative to a subscriber optical interface, (10) the routing device determining which downstream packets are sent to a respective multiplexer, each multiplexer comprising: (11) a plurality of classifiers for determining type of information contained in a downstream packet, and (12) a plurality of policers for controlling bandwidth by one of discarding packets and assigning one of two priority values to a downstream packet; (13) a plurality of buffers for receiving downstream packets from the policers; (14) a laser transmitter coupled directly to the buffers for propagating the downstream packets over an optical waveguide; (15) an optical tap coupled to the optical waveguide; and (16) the subscriber optical interface coupled to the optical tap for converting the downstream packets from an optical

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domain into an electrical domain that support services of a subscriber, as recited in amended independent Claim 25.

As noted above with respect to independent Claim 13, the Zheng reference may describe multiple line cards with output buffers 146. However, the output buffers 146 are not coupled directly to laser transmitters for propagating the downstream packets over an optical wave guide. Further, the Zheng reference also does not provide any teaching of a subscriber optical interface coupled to an optical tap for converting the downstream packets from an optical domain into an electrical domain that supports services of a subscriber.

In light of the differences between amended independent Claim 25 and the Zheng reference, one of ordinary skill in the art recognizes that the Zheng reference cannot anticipate or render obvious the recitations as set forth in amended independent Claim 25. Accordingly, reconsideration and withdrawal of the rejection of Claim 25 are respectfully requested.

Independent Claim 30

The rejection of Claim 30 is respectfully traversed. It is respectfully submitted that the Zheng reference fails to describe, teach, or suggest a method for policing downstream data packets exiting a network comprising the combination of: (1) forming exit pathways of the optical network within a laser transceiver node; (2) positioning a plurality of classifiers and policers at directly adjacent to the exit pathways of the optical network, (3) each exit pathway comprising a laser transmitter and an optical waveguide; (4) discarding downstream packets in an electrical domain with the policers if they exceed a peak rate; (5) assigning one of at least two priority values to each downstream packet with the policers; (6) controlling downstream data packet egress from the network in an electrical domain at a position directly adjacent to the exit pathways by evaluating the priority values with the policers; (7) receiving downstream data packets from the policers with a laser transmitter; (8) converting the downstream data packets into an optical domain with the laser transmitter; (9) propagating the downstream optical data packets over an optical waveguide; (10) receiving the downstream optical data packets with a subscriber optical interface; and (11) converting the downstream optical data packets into an electrical domain with the subscriber optical interface for supporting services of a subscriber, as recited in amended independent Claim 30.

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The Zheng reference simply does not describe exit pathways comprising a laser transmitter and an optical wave guide. Further, the Zheng reference does not provide any teaching of controlling downstream data packets from a network in an electrical domain in a position directly adjacent to the exit pathways by evaluating priority values with the policers. The Zheng reference also does not teach receiving downstream data packets from policers with a laser transmitter and then converting the downstream data packets into an optical domain with the laser transmitter. The Zheng reference also does not convert the downstream optical data packets into an electrical domain with the subscriber optical interface for supporting services of a subscriber.

In light of the differences between independent Claim 30 and the Zheng reference, one of ordinary skill in the art recognizes that the Zheng reference cannot anticipate or render obvious the recitations as set forth in amended independent Claim 30. Accordingly, reconsideration and withdrawal of this rejection of independent Claim 30 are respectfully requested.

Dependent Claims 2-12, 14-24, 26-29, and 31-33

The Applicants respectfully submit that the above-identified dependent claims are allowable because the independent claims from which they depend are patentable over the cited references. The Applicants also respectfully submit that the recitations of these dependent claims are of patentable significance.

In view of the foregoing, the Applicants respectfully request that the Examiner withdraw the pending rejections of dependent Claims 2-12, 14-24, 26-29, and 31-33.


CONCLUSION

The foregoing is submitted as a full and complete response to the Final Office Action mailed on October 5, 2005. The Applicants and the undersigned thank Examiner Bello for consideration of these remarks. The Applicants have amended the claims and have submitted remarks to traverse rejections of Claims 1-33. The Applicants respectfully submit that the present application is in condition for allowance. Such action is hereby courteously solicited.

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If the Examiner believes that there are any issues that can be resolved by a telephone conference, or that there are any formalities that can be corrected by an Examiner's amendment, please contact the undersigned in the Atlanta Metropolitan area (404) 572-2884.

Respectfully submitted,


Steven P. Wigmore
Reg. No. 40,447

King & Spalding LLP
191 Peachtree Street, N.E.
Atlanta, Georgia 30303-1763
telephone: (404) 572.4600
K&S File No. 08286-105004